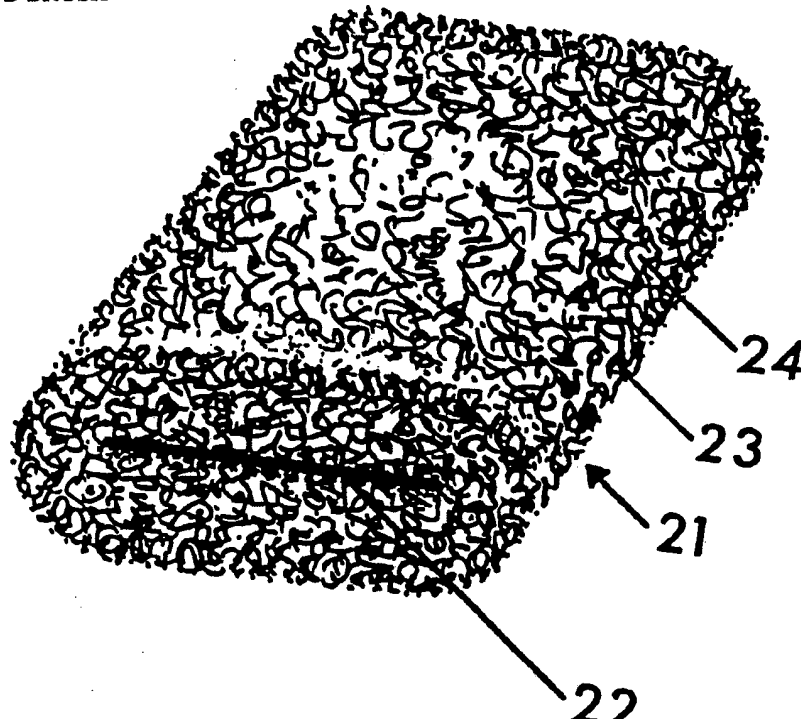




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/US90/06896 (22) International Filing Date: 27 November 1990 (27.11.90) (30) Priority data: 443,085 28 November 1989 (28.11.89) US (71)(72) Applicant and Inventor: SCHUBERT, Zyfryd, B. [US/US]; 3811 Orchard Street, Cherry Valley, CA 92223 (US). (74) Agent: GROSS, Stephen, D.; Blakely, Sokoloff, Taylor & Zafman, 12400 Wilshire Boulevard, 7th Floor, Los Angeles, CA 90025 (US).		(81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent). Published <i>With international search report.</i>
(54) Title: SCRUB BRUSH  (57) Abstract <p>The invention relates to bathing and cleansing articles, and more particularly, to improved scrub brushes (21) specifically made to contain a bar of soap (25) for use for bathing, cleansing, and the like.</p>		

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SCRUB BRUSH

SUMMARY OF THE INVENTION

It has long been considered desirable to find a means of incorporating a bar of soap into a sponge or brush to facilitate bathing. Over the years many attempts have been made toward such an invention, but for one reason or another, either economical, practical or aesthetic, heretofore all have met with failure. Early inventions were simply washcloths sewn into the shape of a pocket to contain the soap bar, and later, others tried slotting sponges. The basic problems encountered were that the materials used often retained so much water that the soap was quickly softened and wasted, or the sponge required a means of closure to contain the soap bar, thus exaggerating the first problem. As a result, many elaborate, expensive solutions were proposed.

This invention overcomes the disadvantages and problems of the prior art by the novel design of incorporating the unique qualities of an elastic, synthetic, fibrous batt, or chemical foam, with an unusual size and shape so as to eliminate the previous problems and disadvantages in a simple, economical way.

DETAILS OF THE PREFERRED EMBODIMENT

This invention, in the preferred embodiment, is a scrub brush made of an elastic resilient, synthetic, fibrous batt, or open cell chemical foam, preferably polyurethane, formed into a desirable shape including an internal cavity or tunnel therein to contain a bar of soap or other solid cleansing substance. The cavity of the brush is necessarily smaller in cross-sectional area, or narrower than the typical size of the bar of soap, requiring the use to gently force the new bar of soap into the cavity of the scrub brush, thus slightly deforming the brush. Because of the batt's elastic, resilient quality, the batt rebounds, and thus tightly holds the new soap bar. When used, the outer surface of the soap bar softens slightly, resulting in the batt contracting further, and because of the batt's fibrous quality, embedding itself into the surface of the soap bar, resulting in a bond between the soap bar and the batt. Thus bonded, the soap bar becomes the internal backbone of the scrub brush, facilitating very easy handling for vigorous as well as gentle scrubbing, without the soap bar slipping out of the open cavity, and while also producing a rich lather.

³
IN THE DRAWINGS

FIG 1 is a perspective view of the scrub brush according to the invention;

FIG 2 is an end view of the scrub brush shown in FIG 1;

FIG 3 is a cross-sectional view taken on line 3-3 of FIG 2;

FIG 4 is a perspective view of a scrub brush shown with a soap bar in the cavity;

FIG 5 is an end view of the scrub brush of FIG 4;

FIG 6 is a cross-sectional view taken on line 6-6 of FIG 5;

FIG 7 is an end view of a scrub brush shown with a cavity in the shape of a wide oval;

FIG 8 is an end view of a scrub brush shown with a cavity cut in the shape of a zig zag pattern;

FIG 9 is an end view of a scrub brush shown with a cavity cut in the shape of a wave pattern;

FIG 10 is an end view of a scrub brush formed of two layers of dissimilar materials and/or textures;

FIG 11 is an end view of a scrub brush shown with multiple layers with a cavity formed by joining two layers together;

FIG 12 is a perspective view of a scrub brush shown with multiple layers.

DETAILED DESCRIPTION OF DRAWINGS

Now with more particular reference to the drawings, a scrub brush 21 is shown of a generally oval cylinder shape, approximately 4 inches long, 3 inches wide and 1-1/4 inches high. The cavity 22 therein is cut in the shape of a wide slit approximately 2 inches wide. The fiber 23 of the batt is shown in its lofty three dimensional arrangement. The interconnecting voids 24 in the batt or foam surrounding the cavity 22 are somewhat random in shape, generally greater than 1/30th of an inch and less than 1/3 of the inch in diameter to facilitate penetration of the fiber into the softened bar, and also to facilitate drainage of excess water. In FIG 4, FIG 5, and FIG 6 the soap bar 25 is shown in the cavity 22 of the brush. Since the cavity has a smaller cross sectional area than the soap bar, (or smaller cross-sectional perimeter), the soap bar 25 has expanded and deformed the brush and cavity to conform to the shape of the soap bar. The resulting tension on the soap bar holds the bar in place during use, and embeds the fibrous batt into the bar as it softens.

FIG 7, FIG 8, and FIG 9 are shown as a sample of the various possible types of cavities of the scrub brush. For the purpose of providing a scrub brush with multiple textures for gentle as well as abrasive scrubbing, the scrub brush of FIG 10 is shown formed of two layers of dissimilar materials and/or textures (joined together with a suitable means) with the relatively coarse batt surrounding the cavity. In the interest of manufacturing simplicity, the scrub brush of FIG 11 is shown formed of multiple layers (joined together with a suitable means), resulting in the cavity being formed in the shape of a flat cavity or pocket. The methods of joining or bonding the multiple layers of FIG 9, FIG 10, FIG 11, and FIG 12 could be flame bonding, or sonic welding, or other heat sealing means. They could be bonded together with adhesives or they could even be sewn together.

It will be understood by one skilled in the art, that a scrub brush with such a configuration allows a great variety of shapes and sizes of different soap and detergent bars to be used without any special adaptation, through the size of the invention could be easily adapted to any particularly unusual size of specific soap bar. The special criteria of course is that the cavity be somewhat smaller in cross-section area, or cross-sectional perimeter, than that of the intended soap bar. Currently, the most widely used shape and size of detergent or soap bar is that of a

rounded rectangular block approximately 2-1/4 inches wide, 3-1/2 inches long and 1 inch thick, with a cross-sectional area of about 2-1/4 square inches, a cross-sectional perimeter of approximately 5-3/4 inches, though oval and other shapes of roughly the same volume are also popular. In practice, in order to sufficiently hold the soap bar, the cross sectional area of the cavity could be between thirty five and ninety percent of the cross-sectional area of the soap bar, depending of course on the strength, elasticity and resiliency of the batt or foam, but it has been found that a figure of approximately seventy percent appears to be optimum. When the cavity is formed in the shape of a wide slit, the cross-sectional area of the cavity should be measured as the area of a shape similar to that of the bar where the length of the cross-sectional perimeter of the bar is equal to twice the length of the slit. Or the proportion of the effective area of the cavity cut in the shape of a slit to that of the bar could be measured as a proportion of the cross-sectional perimeter of the soap bar to that of the slit. For example, for a soap bar with a 5-3/4 inch cross-sectional perimeter, the optimum width of a cavity in the shape of a wide slit should be approximately:

$$5\text{-}3/4 \times .70 \times .5 = 2 \text{ inches wide}$$

In the case that the cavity is cut in the shape of an irregular slit such as FIG 8 and FIG 9, which would obviously have a greater cross-sectional perimeter than a cavity cut in the shape of a linear slit, the width of the cavity should still be measured as approximately the same as the overall linear width of the cut, because the effective area of both cavities would still be similar. It can readily be seen that many different shapes of cavity are possible, but the intent of shape and size of the cavity of the present invention, (in combination with the batt's fibrous quality), is to provide the brush with the ability to place a sufficient tension on the soap bar to hold the bar in an open cavity without the necessity of a means of closure for the cavity.

Furthermore, in the preferred embodiment, the scrub brush is made of an elastic, resilient, fibrous batt or reticulated chemical foam, strong enough to adequately accommodate the soap bar without tearing, with a sufficiently low density for bathing comfort, with cells large enough and with a minimal cell surface area to facilitate drainage of excess water, and with a structure fibrous enough to facilitate penetration into the softened soap bar to form a firm bond with the soap

bar. It has been found that a thermally reticulated polyurethane open cell foam with an approximate density of 1.2 to 2.2 lbs per cubic foot, with an average cell size of approximately 15 pores per linear inch, (as measured in the industry), a tensile strength of approximately 10 psi and an ultimate elongation of approximately 100 percent is satisfactory, though different types of urethane foam have even greater strength and ultimate elongation. For bathing comfort, the greater the number of pores per linear inch, the softer the brush; but the fewer the number of pores per inch, the greater the penetration into the softened bar and the faster the drainage of excess water, which prevents soap waste. It has also been found that a batt with an approximate cell size of 15 pores per linear inch appears to be the optimum size to satisfy both requirements, (for a brush formed of a single texture batt), but an even more desirable brush can be made by bonding such a batt to a much softer batt of about 40 to 80 ppi on an opposite face of the brush for both vigorous and for more delicate cleansing. The resulting brush thus has two different textures, one on each of the two opposing faces.

In use, a person would grasp the edge of the batt or foam and gently force a bar of soap or detergent into the opening of the batt, thus forming a scrub brush; then wet, lather, and use as desired. Since the soap bar is accessible at the end of the cavity, a quick lather can be achieved by simply rubbing the end of the bar. With use, as the soap bar becomes smaller over time, a person simply needs to insert another bar into the cavity in a similar fashion. The new soap bar will bond to the old bar overnight, thus eliminating the need to handle small pieces of soap.

Though the preferred embodiment is generally a reticulated chemical foam butt in a rounded rectangular block shape with a wide, oval bore or slit for a cavity, in practice, the brush could be of any particular shape, such as a rectangular block with a slit with rounded ends, a round bore, or even a round tube. The brush could be constructed of multiple layers of similar or dissimilar chemical foam or fiber joined together with a suitable means. It could be constructed with a coarse batt or foam for excellent drainage surrounded by a finer one for bathing comfort. The batt could be made of a woven synthetic material, or surrounded by a netting of woven synthetic material. The brush could be made with grooves or cuts in the face for improved scrubbing action. The brush could be reversible. The cavity could be enclosed on all sides

except one; and many other such variations will be obvious to one skilled in the art.

It will also be obvious that the scrub brush described should not be restricted only for use as a bathing article, for with the proper cleansing or scouring substance, the brush will work efficiently as an all purpose cleansing article. In such a cleansing article, the batt could be constructed of a reticulated chemical foam, or of a body of nonwoven, synthetic fibers arranged in a lofty three dimensional random arrangement and bonded together at their intersections to form a plurality of interconnecting voids, (as is common in the industry), resulting in a batt with somewhat similar properties to that of a batt of reticulated chemical foam.

Although it being understood that changes may be made in the form, size, proportions, and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention, I claim:

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CLAIMS

14. A scrub brush comprising: a body of nonwoven, synthetic fibers; said fibers arranged in a lofty three dimensional random arrangement and bonded together to form a plurality of interconnecting voids; said body formed to include an internal cavity open at least at one end therein to contain a bar of soap; said cavity being less in cross-section area than said bar so that said body of fibers must be deformed to accommodate said bar; said body of fibers being sufficiently elastic and resilient enough to rebound and firmly hold said bar, and to embed itself into said bar as it softens; said voids being large enough to facilitate drainage of excess water.

15. A scrub brush comprising: a body of reticulated chemical foam formed to include an internal cavity open at least at one end therein to contain a bar of soap; said cavity being less in cross sectional area than said bar so that said body must be deformed to accommodate said bar; said body of foam being sufficiently elastic and resilient enough to rebound and firmly hold said bar, and fibrous enough to embed itself into said bar as it softens; the pores of said foam being large enough to facilitate drainage of excess water.

16. A scrub brush according to claim 15: wherein said body of foam is formed of a plurality of individual layers joined together with a suitable means.

17. A scrub brush comprising: a body of reticulated chemical foam formed to include an internal cavity open at least at one end therein to contain a bar of soap; said cavity being formed into a shape wherein said body of foam must be deformed to accommodate said bar; said body of foam being sufficiently elastic, resilient, and fibrous enough to rebound and firmly hold said bar in said cavity without a means of closure for said cavity.

18. A scrub brush according to claim 16: wherein said cavity is formed by joining said layers together with said suitable means.

19. A scrub brush according to claim 15: wherein said chemical foam has a density of 1.0 to 3.0 lbs/cubic foot; and average cell size between 5 and 35 pores per linear inch; a tensile strength of at least 5 psi; and an ultimate elongation of at least 50 percent.

20. A scrub brush according to claim 15: wherein said cavity is formed in the shape of a wide slit whose cross-sectional perimeter is less than that of said bar.

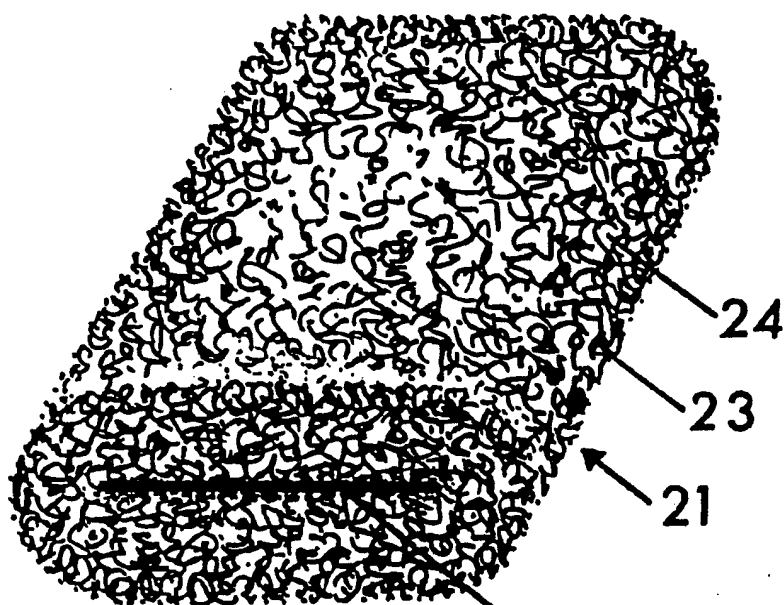


FIG 1

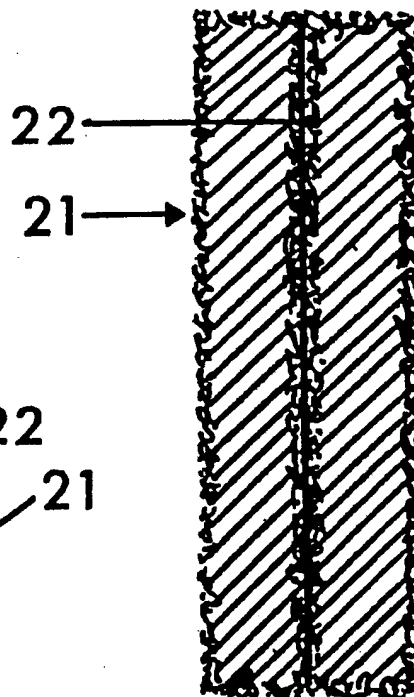


FIG 3

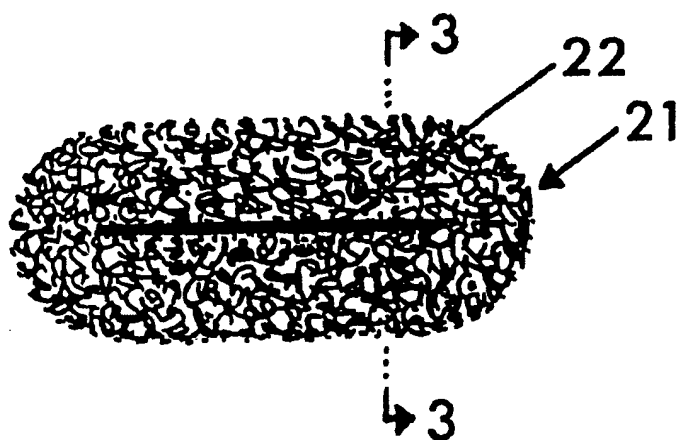
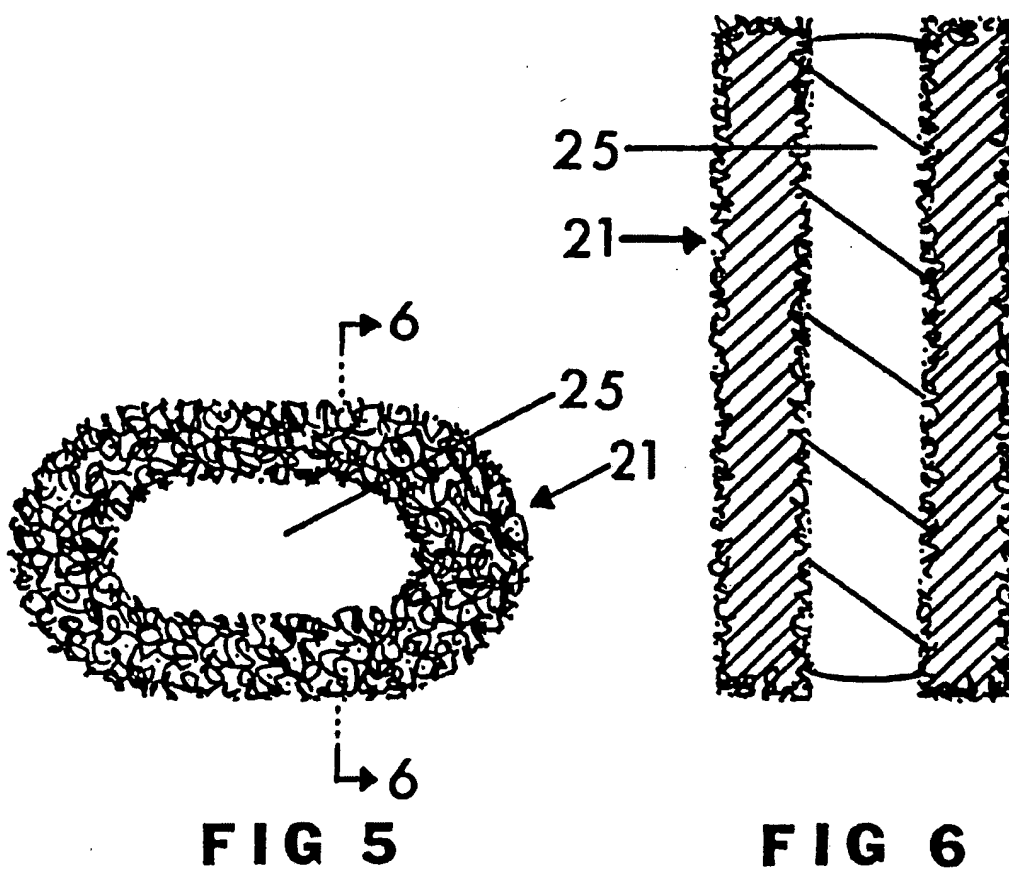
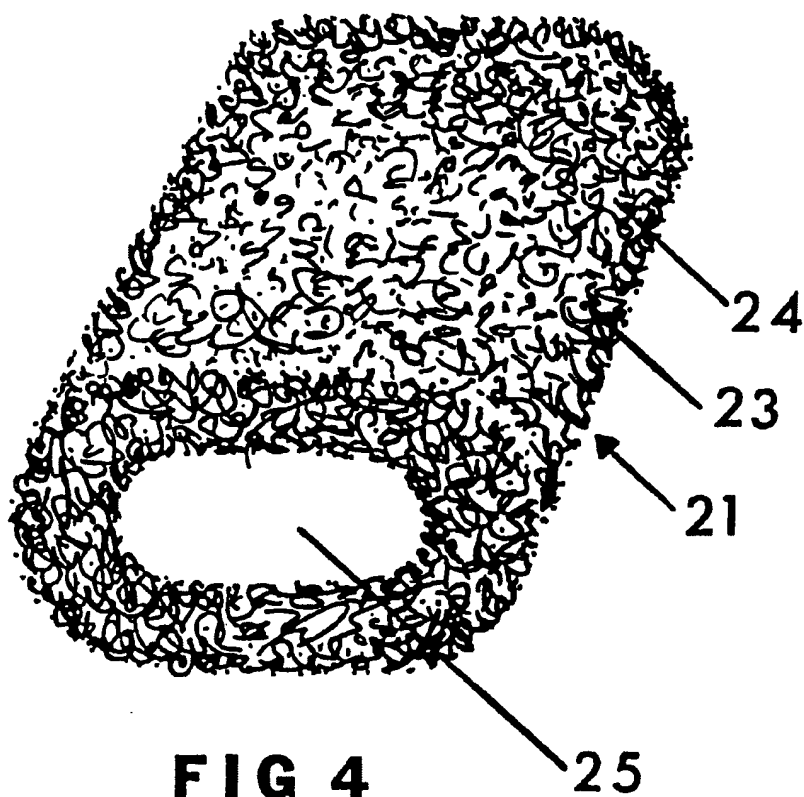


FIG 2

2 / 4



SUBSTITUTE SHEET

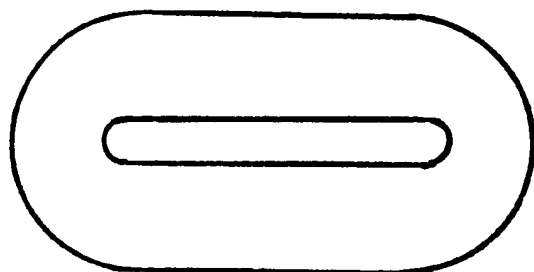


FIG 7

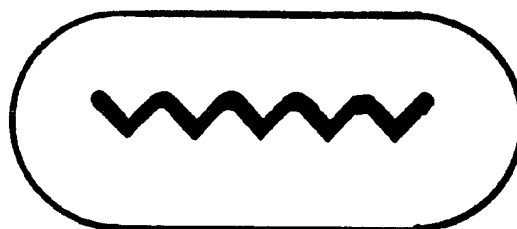


FIG 8

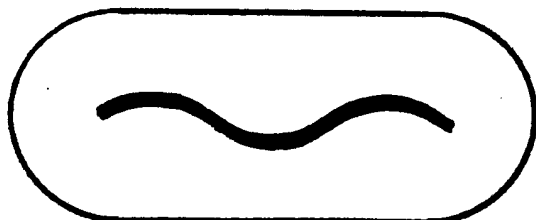


FIG 9

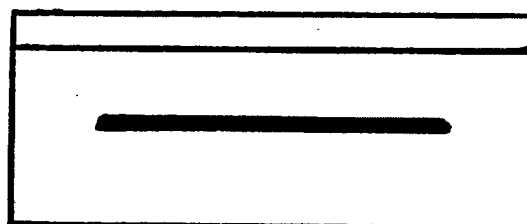


FIG 10

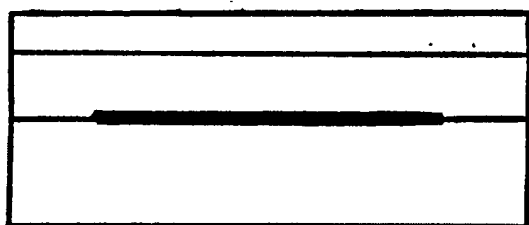


FIG 11

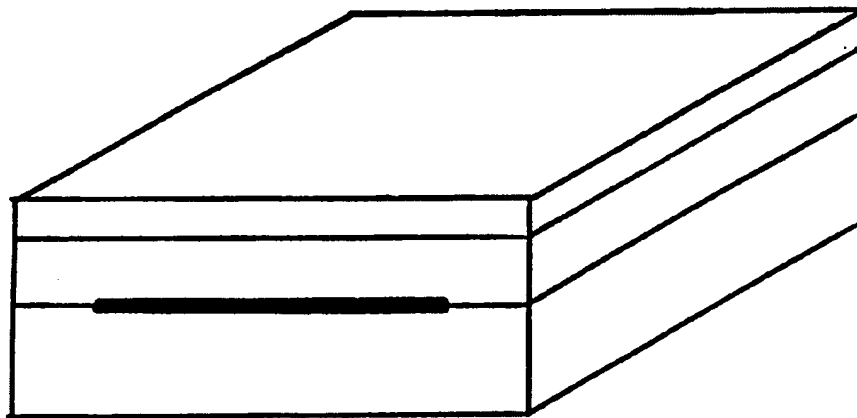


FIG 12

INTERNATIONAL SEARCH REPORT

International Application No. PCT/US90/06896

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ³ According to International Patent Classification (IPC) or to both National Classification and IPC IPC(5) : A47L 13/17 US CL : 15/209C, 227; 51/400; 401/201																										
II. FIELDS SEARCHED <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black; margin: 5px 0;">Minimum Documentation Searched ⁴</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black;">Classification System</td> <td style="width: 50%; border-bottom: 1px solid black;">Classification Symbols</td> </tr> <tr> <td style="padding: 5px;">US</td> <td style="padding: 5px;">15/209B, 209C, 209D, 227 51/400 401/201</td> </tr> </table> <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black; margin: 5px 0;">Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁵</div>			Classification System	Classification Symbols	US	15/209B, 209C, 209D, 227 51/400 401/201																				
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III. DOCUMENTS CONSIDERED TO BE RELEVANT ^{1*} <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Category ²</th> <th style="width: 70%;">Citation of Document, ^{1*} with indication, where appropriate, of the relevant passages ^{1*}</th> <th style="width: 20%;">Relevant to Claim No. ^{1*}</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Y</td> <td>US, A, 837,759, pub. 04 DECEMBER 1906, Weston</td> <td style="text-align: center;">14,15,17</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>GB, A, 165,348, pub. 29 JULY 1920, WENTE</td> <td style="text-align: center;">14,15,17</td> </tr> <tr> <td style="text-align: center;">A</td> <td>US, A, 1,748,406 pub. 25 FEBRUARY 1930, BLAIR</td> <td style="text-align: center;">14-20</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>US, A, 1,909,986 pub. 23 MAY 1933, JONES</td> <td style="text-align: center;">14,15,17</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>US, A, 2,032,762 pub. 03 MARCH 1936, MITCHELL</td> <td style="text-align: center;">14-20</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>US, A, 3,175,331 pub. 30 MARCH 1965, KEVIN</td> <td style="text-align: center;">14-18</td> </tr> <tr> <td style="text-align: center;">y</td> <td>US, a, 4,510,641 pub. 16 APRIL 1985, MORRIS</td> <td style="text-align: center;">14-18</td> </tr> </tbody> </table>			Category ²	Citation of Document, ^{1*} with indication, where appropriate, of the relevant passages ^{1*}	Relevant to Claim No. ^{1*}	Y	US, A, 837,759, pub. 04 DECEMBER 1906, Weston	14,15,17	Y	GB, A, 165,348, pub. 29 JULY 1920, WENTE	14,15,17	A	US, A, 1,748,406 pub. 25 FEBRUARY 1930, BLAIR	14-20	Y	US, A, 1,909,986 pub. 23 MAY 1933, JONES	14,15,17	Y	US, A, 2,032,762 pub. 03 MARCH 1936, MITCHELL	14-20	Y	US, A, 3,175,331 pub. 30 MARCH 1965, KEVIN	14-18	y	US, a, 4,510,641 pub. 16 APRIL 1985, MORRIS	14-18
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>[*] Special categories of cited documents: ^{1*}</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p> </div> </div>																										
IV. CERTIFICATION <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;">Date of the Actual Completion of the International Search ²</td> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;">Date of Mailing of this International Search Report ³</td> </tr> <tr> <td style="padding: 5px;">22 FEBRUARY 1991</td> <td style="text-align: center; padding: 5px;">15 MAR 1991</td> </tr> <tr> <td style="border-bottom: 1px solid black; padding: 5px;">International Searching Authority ¹</td> <td style="border-bottom: 1px solid black; padding: 5px;">Signature of Authorized Officer ²</td> </tr> <tr> <td style="padding: 5px;">ISA/US</td> <td style="text-align: center; padding: 5px;"> CHRIS K. MOORE INTERNATIONAL DIVISION </td> </tr> </table>			Date of the Actual Completion of the International Search ²	Date of Mailing of this International Search Report ³	22 FEBRUARY 1991	15 MAR 1991	International Searching Authority ¹	Signature of Authorized Officer ²	ISA/US	 CHRIS K. MOORE INTERNATIONAL DIVISION																
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